

CLAIMS

What is claimed is:

1. In a switched telecommunications network having end office switching systems controlled by a common channel signaling system connected to the end office switching systems and to paired signal transfer

5 points, the method comprising:

monitoring the signaling between the end office switching systems and the signal transfer points and selecting the signaling relating to transactions;

10 collating the selected signaling by transaction;

processing the collated signaling to create relational flat files relating to multiple transactions;

15 subjecting the flat files to on line analytical processing to provide a multidimensional database to consolidate and summarize ongoing transactions and provide reports thereof.

2. A method according to claim 1 wherein said transactions comprise completed dialed telecommunication sessions between a calling terminal and a called terminal.

3. A method according to claim 2 wherein said transactions also comprise <sup>u</sup>incompleted dialed attempts

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to establish telecommunication sessions between a calling terminal and a called terminal.

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4. A method according to claim 3 including the step of providing a report of calls dialed to a designated terminal in a designated time period.

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5. A method according to claim 4 wherein said report includes data relating to the time of connection of completed calls.

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6. A method according to claim 5 wherein said report includes data relating to the number of <sup>4</sup>incompleted calls within a time frame.

7. A method according to claim 2 wherein said transactions comprise completed dialed telecommunication sessions between a calling terminal and a called terminal, and including the steps of  
5 providing a report of calls dialed to a designated terminal in a designated time period and data regarding the lengths thereof.

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8. A method according to claim 7 wherein said transactions also comprise incompleted attempts to establish dialed telecommunication sessions between a calling terminal and a called terminal, and including  
5 the steps of providing a report of the incompleted calls dialed to said designated terminal in said designated time period.

9. A method according to claim 7 wherein said report includes information regarding the routing of said calls.

10. A method according to claim 9 wherein said report includes information as to whether said calls were routed through a tandem switching system.

11. A method according to claim 10 wherein said report includes information identifying the originating switching systems, the tandem switching systems, and the terminating switching systems for said calls.

12. A method according to claim 11 wherein said report includes information as to whether said calls were routed through a tandem switching facility without routing through the tandem switch.

13. A method according to claim 12 wherein said report includes information as to whether said calls were routed through the switch in said tandem switching installation.

14. A method according to claim 1 wherein said common channel signaling system is an SS7 system and said monitoring occurs on A links in that system.

15. A method according to claim 14 wherein said monitoring occurs on A links to the originating

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switching systems and to the terminating switching systems.

16. A method according to claim 15 wherein said monitoring also occurs on A links to a tandem switching system connected between said originating and said terminating switching systems.

17. A method according to claim 15 including the step of providing a report of calls dialed to a designated terminal in a designated time period and including identification of the originating switching systems.

18. In a switched telecommunications network having end office switching systems controlled by a common channel signaling system connected by links to the end office switching systems and to paired signal transfer points, the method comprising:

identifying an end office switching system observed to have encountered congestion;

monitoring the links between the signal transfer points and the identified switching system;

trapping all common channel signaling between the signal transfer points and the identified switching system for a time period;

processing the trapped signaling to form call detail records;

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15 processing the call detail records to determine  
which numbers served by the identified switching  
system received the most calls within the time period;  
and

calling the identified numbers and determine  
20 which numbers serve modems.

19. A method according to claim 18 including the  
step of identifying the numbers of terminals which  
originated calls to the switching system identified as  
having received the most calls within the time period.

20. A method according to claim 19 including the  
step of determining the end office switching systems  
serving the originating terminals.

21. A method according to claim 18 wherein said  
call detail records include dialed calls which were  
not completed.

22. A method according to claim 18 wherein said  
processing of said call detail records includes on  
line analytical processing to provide a  
multidimensional database to consolidate and summarize  
5 ongoing calls and provide reports thereof.

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~~23. In a switched telecommunications network  
having end office switching systems controlled by an  
SS7 common channel signaling system using packet  
switching via A, B, C, and D links connected to paired~~

5 signal transfer points connected to one another by D links and connected by A links to the end office switching systems, the method comprising:

10 monitoring the signaling in said A links and selecting the A link signaling relating to call set up;

collating said selected signaling by call;

processing said collated signaling to create relational files relating to multiple calls;

15 subjecting the relational files to on line analytical processing to provide a multidimensional database to consolidate and summarize ongoing call attempts and completions and provide reports thereof.

24. A method according to claim 23 including the step of providing a report of calls dialed to a designated terminal in a designated time period.

25. A method according to claim 24 wherein said report includes data relating to time of connection of completed calls.

26. A method according to claim 25 wherein said report includes data relating to the number of incompleted calls within a time frame.

27. A method according to claim 25 wherein said report includes information regarding the routing of said calls.

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28. A method according to claim 27 wherein said report includes information as to whether said calls were routed through a tandem switching system.

29. In a switched telecommunications network having trunked end office and tandem switching systems controlled by an SS7 common channel signaling system using packet switching via A, B, C, and D links  
5 connected to paired signal transfer points connected to one another by C links and connected by A links to the end office and tandem switching systems, the method comprising:

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10 monitoring the signaling in said A links and selecting the A link signaling relating to call set up between end office switching systems through a tandem switching system;

15 collating said selected signaling by call based at least in part on A link signaling to and from said tandem switching system;

processing said collated signaling to create relational files relating to multiple calls;

20 subjecting the relational files to on line analytical processing to provide a multidimensional database to consolidate and summarize successful and unsuccessful attempts to route calls through said tandem switching system and provide reports thereof.

30. A method according to claim 29 including the steps of providing reports of the identity of the end

office switching systems from which calls were routed to said tandem switching system.

31. A method according to claim 30 including the steps of providing reports of the identity of the end office switching systems to which calls were routed from said tandem switching system.

32. A switched telecommunications network having trunked end office and tandem switching systems controlled by an SS7 common channel signaling system using packet switching via A, B, C, and D links  
5 connected to paired signal transfer points connected to one another by C links and connected by A links to the end office and tandem switching systems, comprising;

monitors interfacing to the signaling in said A  
10 links and selecting the A link signaling relating to call set up between end office switching systems through a tandem switching system;

processing means collating said selected  
signaling by call based at least in part on A link  
15 signaling to and from said tandem switching system;

processing means processing said collated  
signaling to create relational files relating to  
multiple calls;

on line analytical processing means providing a  
20 multidimensional database, wherein said relational flat files are processed to consolidate and summarize



successful and unsuccessful attempts to route calls through said tandem switching system and provide reports thereof.

SubH 5 33. A switched telecommunications network according to claim 32 wherein said online analytical processing means provides a data warehouse including multiple related tables which said on line analytical processor drills into to retrieve additional information.

34. A switched telecommunications network according to claim 33 wherein said on line analytical processor is object oriented.

35. A switched telecommunications network according to claim 33 wherein at least part of said information is obtained from switching systems in said switched telecommunications network.

5 36. A switched telecommunications network according to claim 33 wherein at least part of said information is obtained from an automated message accounting system in said switched telecommunications network.

37. A switched telecommunications network according to claim 33 wherein at least part of said information relates to calls completed through intra switching system connections.

38. In a switched telecommunications network having end office switching systems controlled by a common channel signaling system connected to the end office switching systems and to paired signal transfer points, and including automatic message accounting equipment recording call details of a connection transaction, the method comprising:

monitoring the common channel signaling between the end office switching systems and the signal transfer points and selecting the signaling relating to connection transactions;

collating the selected common channel signaling by transaction;

collating automatic message accounting equipment output recording call detail;

processing the collated common channel signaling and automatic message accounting output to provide a multidimensional database to consolidate and summarize ongoing transactions and provide reports thereof.

39. A method according to claim 38 wherein said last named processing is performed at least in part by on line analytical processing means providing a multidimensional database, wherein relational data is processed to consolidate and summarize successful and unsuccessful attempts to route calls to completion.

40. A method according to claim 38 wherein said on line analytical processing means extracts data from

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5 storages in said switched telecommunications network in addition to said common channel signaling and said automatic message accounting equipment to provide said reports.

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41. A method according to claim 40 wherein said storages at least in part comprise storage associated with end office switching systems.

42. A method according to claim 41 wherein said extracted data relates to equipment associated with the switching system.

43. A switched telecommunications network having trunked end office and tandem switching systems controlled by an SS7 common channel signaling system using packet switching via A, B, C, and D links connected to paired signal transfer points connected to one another by C links and connected by A links to the end office and tandem switching systems, said network including;

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10 monitors interfacing to the signaling in said A links and selecting the A link signaling relating to call set up between end office switching systems;

15 processing means collating said selected signaling by call based at least in part on A link signaling to and from said end office switching systems;

processing means processing said collated signaling to create relational files relating to multiple calls;

20 automatic message accounting equipment recording call details of call set up and tear down;

on line analytical processing means providing a multidimensional database, wherein said relational files and information relating to said call set up and tear down are processed to consolidate and summarize  
25 successful and unsuccessful attempts to route calls through said tandem switching system and provide reports thereof.

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